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Thanks for the work that you do

Expressions of gratitude to one of us working in tobacco use prevention really applies to all of us who do this work

by Jim McDonald

In the mail recently, I received a hand-written note thanking me for the work that I do. It was immensely gratifying, to say the least. As I thought about it, it occurred to me that everyone who works in tobacco use prevention could feel proud of this note, because it is for you, as well. If you are a secretary, a grant writer, an organizer, an educator, a manager, a researcher, whatever you do, you are part of the solution.

So if someone has thanked you for the work you do, you need to let your colleagues know about it, because it will make all the rest of us feel just as good as it made you feel. Send those to jim.mcdonald@dhss.mo.gov.

My thanks came in the mail, but your's could have been just a comment at the grocery store or at church or just about anywhere.

There is no time limit on submitting your vote of thanks. This will be the kind of gift that keeps giving to us all regardless of the season.

A note of thanks

The person who wrote to thank me for working in tobacco prevention had discovered, to his shock and horror, that while he wasn't looking, his two teen-age daughters had taken up the habit of smoking. In his note he described how he

We Need You!

To tell us who appreciates what you do

to prevent tobacco use.

It might be your spouse, your neighbor, your co-worker or a total stranger.

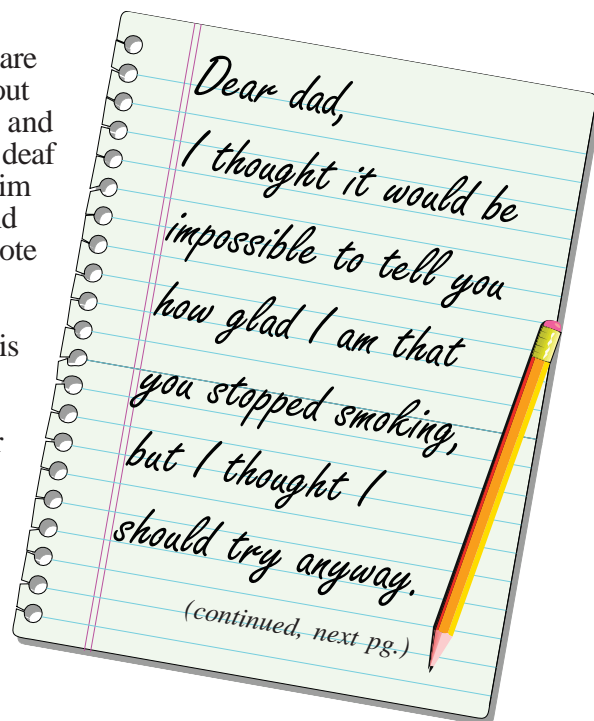
But a vote of thanks for one of us is a vote for all of us. Let us know.

E-mail it to me, jim.mcdonald@dhss.mo.gov



The article that he referred to was written in the form of a letter to my dad after he had suffered a heart attack brought on by a 50-year smoking habit. The focus of that letter was to put complex scientific principles into common language. It is reproduced in its entirety below and on the following pages of this newsletter.

frantically hit all the alarm buttons and tried all the scare tactics, talking to them about bad breath, bad skin, etc., and all seemed to be falling on deaf ears. Then a friend gave him an article written by me and published in 1979. He wrote that he sat his daughters down and read it to them with tears in his eyes. In his note, he wrote that when he finished reading it, both girls rose and went to their rooms and came back with their cigarettes and gave them to him to throw away. He wrote that he didn't know how far it would go, but it seemed like he had finally made some progress.



Dear Dad

(continued from pg.1)

Since you had your heart attack, I've tried to find out just why it is that smoking a cigarette is bad for your heart. I realized that even though I've worked in healthcare for many years, I couldn't really say how it is that cigarettes harm the heart. For instance, I've read that even a person who has smoked for many years gets immediate benefits from quitting, but I couldn't remember ever reading why. Now I know, and I think when you see how it works, you'll also see why a person doesn't have to be the smoker of the cigarette to get the bad effects.

The chemicals in cigarette smoke cause heart attacks basically by starving the heart. This happens in two main ways: (1) blood gets less oxygen, and, (2) arteries get squeezed and clogged.

When a breath of air goes into the lungs, it's forced into passages that wind down into bunches of tiny sacks. These little sacks are filters so fine that only vapors (like oxygen) can pass through. Blood circulates over these sacks and soaks up the oxygen that passes through. After oxygen is picked up by the blood and used by the body, carbon dioxide is produced. Carbon dioxide also is a vapor and it passes back across the filters into the lungs and is breathed out the mouth—the body's exhaust.

That's basically how respiration gets oxygen into the blood, which really is the only reason we breathe. When people use the term "life blood" to mean something that is absolutely necessary, they actually mean "oxygenated blood"—blood that is carrying oxygen. The body craves oxygen. This is an easily tested principle. Just hold your breath. If you can hold it long enough, you'll pass out and your body will begin breathing again automatically. Muscles must have oxygen to work. Deprive a muscle of oxygen and it'll last maybe two minutes, tops. No muscle does more work or needs more oxygen than does the heart. Unfortunately, breathing is also the way cigarette

smoke gets into blood and robs the body of oxygen.

To travel through the blood, oxygen must attach itself to blood cells. The part of a blood cell that has the fastener mechanism for oxygen is called hemoglobin. Oxygen fastens to hemoglobin to travel to the heart and throughout the rest of the body. Another chemical that attaches to hemoglobin is carbon monoxide—the same as car exhaust. Carbon monoxide attaches to hemoglobin much more easily than oxygen does—three times more easily. That's why going to sleep in a running car is such an effective form of suicide. Cigarette smoke is about five percent carbon monoxide. When carbon monoxide jumps ahead of oxygen, that's a chemical reaction that can go only one way. Just like a bad smell that always irritates your nose, carbon monoxide will always crowd oxygen out of the bloodstream. So when cigarette smoke is present, the heart will always be short of breath.

When the chemicals in cigarette smoke cross into the bloodstream,

one of the worst is called nicotine. Nicotine is a stimulant like caffeine or a class of drugs called amphetamines. Nicotine causes the central nervous system to release powerful hormones such as epinephrine, which is a drug your body uses when something scares or angers you—this is called the fight-or-flight condition. This can also happen during times of great stress.

When the body gets a good dose of this stuff, it shifts into the passing gear for just a few moments. These hormones cause a rise in blood pressure by causing arteries to shrink tighter. For the flow of blood, this has the same effect as when you squeeze a garden hose to make the water shoot out in a stronger, but smaller, stream. When this happens, your heart works harder to actually

push less blood through tightened arteries. This pinching off of arteries is called vasoconstriction. That's an important term to understand and remember, it's pronounced vay-zo-kuns-trick-shun.

The abrasive action from the raised blood pressure of vasoconstriction damages the surface of artery walls. This damage causes the body to build the walls back abnormally thick. It's scar tissue that builds up like calluses on hands.

As this scar tissue builds up, the walls of blood vessels get thicker and the effects of vasoconstriction gets worse. The thicker they get, the tighter they clamp down, the less blood and oxygen gets to the heart. As all of this works together to clog arteries, other effects of nicotine make the clogging even worse.

Another thing the body releases into the bloodstream is called platelets. Platelets are like little pieces of glue, and the body uses them to form clots. Damage to blood vessel walls stimulates platelet activity, which ordinarily is a defense mechanism that the body uses to patch up a hole or a tear and stop the bleeding. Ordinarily this is a good thing. But the abrasive action of vasoconstriction damages artery walls from the inside, which triggers platelet activity where you don't want it. This excess platelet activity makes blood sticky as vasoconstriction squeezes arteries that are already thickened from abrasive scar tissue. This happens every single time cigarette smoke enters the lungs.

And it doesn't stop there. Nervous system stimulation by nicotine also causes an increase in the blood of something we can call bad fat. Bad fats have ten-cent technical names like lipoproteins and triglycerides, but bad fat just seems like a better name. Bad fat floats around in the bloodstream until it starts sticking to artery walls, especially when blood flow is slower because it's full of sticky platelets clotting up and because the passageway has been made small from scar tissue and from being squeezed narrow by vasoconstriction.

You can see how arteries get

clogged, can't you? Well, there's more. This nicotine stimulation also lowers the amount of what is called good fat. Good fat is like a stock dog; it keeps bad fat moving to where cells can safely store it for use as energy. Through its stimulation of the central nervous system, cigarette smoke promotes both an increase in bad fat and a decrease in good fat, which makes it a major contributor to what is called arteriosclerosis, or clogging of the arteries.

It seems amazing that the heart keeps working at all,

doesn't it? The human body is an incredible machine that adapts, rebuilds and absorbs a lot of punishment. The vasoconstriction effect is one of the better reasons to stop smoking, even if you've already done this to your heart many times a day for the past 50 years—here's why.

The effects of vasoconstriction are probably what make beginning smokers feel light-headed and sick. And while you may get used to the feeling over time, be assured that the effect still is happening inside your arteries every time you light up. A chemical, like nicotine, still does what it does no matter how many times it has done it—like some things stink even if your nose is clogged and you can't smell. In fact, after you've smoked for many years and "toughened" yourself to the effects, all those other effects of this "toughening" process have narrowed your arteries and reduced what is called the reserve capacity for blood flow. A car's gas line is a good example.

It's like if something pinched off the gas line to your carburetor every time you pushed the gas pedal all the way to the floor. The car runs okay, just not when you floor it. Instead of fixing the problem, you drive around feathering that gas pedal and it works just fine. But one day you pull into the path of a speeding bus. Then you floor it to get out of the

way and the gas shuts off right when you need it the most.

That's pretty much what happened when you had your heart attack, dad. Many years of clogging those arteries reduced your reserve capacity. Sooner or later, the effects of vasoconstriction from smoking, or from stress, or from both, are going to be just like crimping that gas line in the path of that Greyhound.

In the body that lack of reserve capacity can produce an effect called coronary artery spasm and searing heart pains called angina. This kind of blockage can do more than give you a pain. This kind of blockage kills toughened smokers every day—the vasoconstriction of only one cigarette could be that bus coming right at you. This is a good reason for someone like you to not be sneaking just one more smoke.

Dad, if you can believe it, we have covered only two of the chemicals (nicotine and carbon monoxide) that cigarette smoke contains—there are some 4,000 others. And we only have talked about some of the ways these two chemicals can damage your heart. We haven't even talked about what these, and the 4,000 other, chemicals do to your overall health and how that limits your oxygen intake even further.

The good news is that chemical reactions don't happen if you don't mix the chemicals. It's like when something stinks. Chemicals drift into your nose and cause your body to produce a sickening feeling. Once you remove the source of the chemicals, then you no longer have the sickening feeling.

Okay, dad, if you're still with me I know exactly what you are thinking. You're wondering if all this is true about the chemicals in cigarette smoke, how could you have smoked for 50 years and still been as healthy and worked as hard as you have for all of them. So here's another example.

If you pour a gallon of gas into one car, you can't get it to do more than sixty; but you can pour a gallon of the same gas into another car and it'll do 120. They're both internal combustion engines pushing four wheels and it's the same chemical reaction, there's just a big difference in potential. It's the same with people, and I guess you just have a bigger motor than most. But even the best machines can take only so much abuse.

Fifty years of chemical abuse is gonna do some permanent damage, even to the best physical specimen. There will be scars. But the immediate effects that chemicals like nicotine and carbon monoxide have on your system will not keep happening if you no longer put those chemicals into your bloodstream. Your blood picks up more oxygen now. Your arteries don't get squeezed tight every ten minutes from a dose of nicotine. Your level of bad fat has already gone down, and your level of good fat is up. Maybe best of all is that because you're a man who has never been known to be a hypocrite, now you can tell your grandchildren that they shouldn't smoke, either.

Keep up the good work, dad. We won't always say it, but everyone is very proud of you for quitting. We know how hard it has been. Maybe next time we can talk about the benefits of exercise.

Love, Jim ■

Special thanks to Tom LaFontaine, Ph.D., director of the Boone Hospital Cardiac Rehabilitation Center, for his contribution to the research for this article.



The Missouri Tobacco Quitline

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it's in your hands.**

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(1-800-784-8669)